

INFORMATION LETTER

NATIONAL CANNERS ASSOCIATION

Special Bulletin to All Green and Wax Bean Canners

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Standards of Identity and Quality for Canned Green and Wax Beans Are Issued by Federal Security Administrator

A revised standard of identity and a new standard of quality for canned green and wax beans under the Food, Drug, and Cosmetic Act were announced on February 19 by the Federal Security Administrator and were published in the *Federal Register* for this same date. The standards become effective May 20, 1947.

In order to give all canners of green and wax beans an opportunity to study both the findings of fact and the exact wording of the official standards, the complete order has been reprinted in full in this special bulletin to this week's *INFORMATION LETTER* and mailed to all green and wax bean canners.

The two standards are similar to those recommended by the Food and Drug Administration last fall, and which were published in full and sent to all canners of green and wax beans as a Special Bulletin to the *INFORMATION LETTER* for November 1, 1946. However, the official standards differ in some respects from the proposed regulations, notably the proposed provision regarding "Jumble Pack" has been taken out, and the suggested requirement about tough strings has been limited to the Number 6 and larger sieve sizes.

Every canner of green and wax beans should study the complete standards very carefully. After the effective date—May 20, 1947—all interstate shipments of canned green and wax beans will be subject to all of the requirements of the new Federal Security Agency standards.

Full text of the standards of identity and quality is as follows:

ORDER FIXING AND ESTABLISHING DEFINITIONS AND STANDARDS OF IDENTITY AND STANDARDS OF QUALITY

By virtue of the authority vested in the Federal Security Administrator

by the provisions of the Federal Food, Drug, and Cosmetic Act (secs. 401, 701, 52 Stat. 1046, 1055; 21 U.S.C. 341, 371); and upon the basis of evidence of record at the hearing held pursuant to the notice issued on April 9, 1946 (11 F.R. 3754), and upon consideration of exceptions filed to the proposed order issued by the Acting Federal Security Administrator on October 18, 1946 (11 F.R. 12584), the following order is hereby promulgated:

DEFINITIONS AND STANDARDS OF IDENTITY

Findings of fact. 1. Canned green beans is the food the principal component of which is succulent pods of the green bean plant. In preparation for canning, the pods are stemmed and may be sliced lengthwise or cut transversely. Water is added to aid in processing. Generally salt and sometimes sugar are used as seasoning ingredients. Dextrose is also suitable for this purpose. The food is sealed in a container and processed by heat to prevent spoilage.

2. Stems are cut from the pods by special machines, the proper operation of which removes the stems from substantially all such pods. These machines are somewhat less effective when the pods are small.

3. Prior to canning, the pods or transversely cut pieces of pod frequently are segregated into lots of approximately uniform diameter. This also is done by special machines. Each lot is designated as a certain "sieve size", the numbers ranging from 1 to 6 as the diameter increases.

4. Whole pods are packed either parallel to the sides of the container or without arrangement. Pods sliced lengthwise, or cut transversely into pieces, are packed without arrangement. Each type of pack gives the finished food special characteristics which are sufficiently distinct for consumers to differentiate between them and to purchase different types of pack for different purposes.

5. When whole green beans are packed parallel to the sides of the con-

tainer, the pods are straight and orderly in appearance and a greater drained weight is generally attained than when they are packed without arrangement. The phrase "Whole—Vertical Pack" generally appears on the label of such packs. Pieces of pods 2½ inches in length or longer are considered whole pods for some purposes.

6. In a special type of vertically packed whole green beans the pods are cut off at both ends to achieve substantial uniformity in length. This type of pack is known as "Asparagus Style".

7. When whole green beans are packed without arrangement the drained weight is generally less than for the "Vertical Pack" and the pods are not straight and uniform in appearance. At the present time it is customary to label this pack as "Whole".

8. Canned green beans sliced lengthwise have a characteristic appearance. This type of pack is designated on the label as "Sliced Lengthwise" or "French Style". The existing regulations also permit the use of the terms "Shoestring" and "Julienne" but these terms have fallen into disuse.

9. In another type of pack of canned green beans, the pods are cut transversely into pieces less than 2½ inches long. The length of the cut pieces varies with different packers. The cutting is done by a special machine with knives spaced at regular intervals. The end pieces may be considerably shorter than the center cuts. Many packers remove the shorter end pieces to achieve uniformity.

10. The existing definition and standard of identity for canned green beans provides that pods cut transversely into pieces be labeled "Cut" irrespective of length. When the pieces are so short as to acquire a characteristic appearance by reason of their short length it is to the consumers' interest to be advised of this fact. Pieces less than ¾ inch in length fall in this category and the dividing line between "Cuts" and "Short Cuts".

may reasonably be set at this point. For packs in which substantially all the pieces are less than $\frac{1}{4}$ inch in length a label statement "Short Cut" or "Short Cuts," or in lieu thereof the word "Cut" or "Cuts" modified by a statement of the approximate length of such pieces, furnishes consumers with this information.

11. The existing definition and standard of identity for canned green beans makes no provision for mixtures of optional forms of green bean ingredients. Differentiating between "Cuts" and "Short Cuts" makes it necessary to provide for mixtures of such optional green bean ingredients and it is reasonable to make provision for all mixtures of optional green bean ingredients. A descriptive label designation for each mixture is: "Mixture of —", the blank being filled in with the combination of the names "Whole", "Sliced Lengthwise", "Cut" or "Cuts", and "Short Cut" or "Short Cuts", designating the optional ingredients present, and arranged in the order of predominance, if any, by weight of such ingredients. In cutting pods into pieces less than $\frac{1}{4}$ inches but not less than $\frac{1}{8}$ inch long, a certain number of shorter end pieces are always obtained. These can be removed by special machines but such machines are not available in all canneries. When no other pieces shorter than $\frac{1}{8}$ inch are added it is reasonable to use the designation "Cut" or "Cuts" on the label.

12. In the existing definition and standard of identity for canned green beans the names "Stringless Green Beans" and "Green Stringless Beans" are recognized as synonyms for "Green Beans." Some green beans which are canned are not stringless and these terms are thus not necessarily synonymous with "Green Beans."

13. Canned wax beans is the food the principal component of which is prepared from succulent pods of the wax bean plant. In all other respects the facts set forth in findings 1 to 11 inclusive are applicable to canned wax beans.

14. In the existing definition and standard of identity for canned wax beans the name "Stringless Wax Beans" is given as a synonym for "Wax Beans." Some wax beans which are canned are not stringless and this term is thus not necessarily synonymous with "Wax Beans."

15. The record contains no evidence of the use of citric acid or vinegars for lowering the pH of canned green or canned wax beans to aid in processing by heat, or of any present or future need for these ingredients, nor any evidence of use or present or future need for spices or vinegars for seasoning canned green or canned wax beans.

Conclusions. On the basis of the evidence of record and of the foregoing findings of fact, it is concluded that the following regulations fixing

and establishing definitions and standards of identity for canned green beans and for canned wax beans will promote honesty and fair dealing in the interest of consumers.

Wherefore, It is ordered, That § 52.990 of Title 21, Code of Federal Regulations, Cum. Supp., be amended by deleting therefrom all references to canned green beans or green stringless beans or stringless green beans and canned wax beans or stringless wax beans.

It is further ordered, That there be established specific definitions and standards of identity for canned green beans and canned wax beans, as follows:

§ 51.10 Canned green beans; identity; label statement of optional ingredients. (a) Canned green beans is the food prepared from stemmed, succulent pods of the green bean plant, and water. It may be seasoned with salt, sugar, or dextrose, or any two or all of these. The pods are prepared in one or more of the following forms:

(1) Whole pods, or transversely cut pods not less than $\frac{1}{4}$ inches in length.

(2) Pods sliced lengthwise.

(3) Pods cut transversely into pieces less than $\frac{1}{4}$ inches in length but not less than $\frac{1}{8}$ inch in length, with or without shorter end pieces resulting therefrom.

(4) Pieces of pods less than $\frac{1}{8}$ inch in length.

Any such form is an optional ingredient. Mixtures of two or more optional ingredients may be used. The food is sealed in a container and so processed by heat as to prevent spoilage.

(b) (1) When optional ingredient (a) (1) is used the label shall bear the word "Whole". If the pods are packed parallel to the sides of the container the word "Whole" shall be preceded or followed by the words "Vertical Pack", except that when the pods are cut at both ends and are of substantially equal lengths, the words "Asparagus Style" may be used in lieu of the words "Vertical Pack".

(2) When optional ingredient (a) (2) is used the label shall bear the words "Sliced Lengthwise" or "French Style".

(3) When optional ingredient (a) (3) is used the label shall bear the word "Cut" or "Cuts".

(4) When optional ingredient (a) (4) of this section is used the label shall bear the words "Short Cut" or "Short Cuts" or "— Inch Cut" or "— Inch Cuts", the blank to be filled in with the fraction of an inch which denotes the approximate length of the pieces.

(5) When a mixture of two or more of the optional ingredients in paragraphs (a) (1) to (a) (4) inclusive is used the label shall bear the statement "Mixture of —", the blank be-

ing filled in with the combination of the names "Whole", "Sliced Lengthwise", "Cut" or "Cuts", and "Short Cut" or "Short Cuts", designating the optional ingredients present, and arranged in the order of predominance, if any, by weight of such ingredients.

(c) Wherever the name "Green Beans" appears on the label so conspicuously as to be easily seen under customary conditions of purchase, the words and statements prescribed by paragraph (b) of this section shall immediately and conspicuously precede or follow such name, without intervening written, printed, or graphic matter, except that the varietal name of the green beans and the designation of the length of cut may so intervene.

§ 51.15 Canned wax beans; identity; label statement of optional ingredients. (a) Canned wax beans conforms to the definition and standard of identity, and is subject to the requirements for label statement of optional ingredients prescribed for canned green beans by § 51.10 (a) and (b), except that it is prepared from stemmed, succulent pods of the wax bean plant.

(b) Wherever the name "Wax Beans" appears on the label so conspicuously as to be easily seen under customary conditions of purchase, the words and statements prescribed by § 51.10 (b) shall immediately and conspicuously precede or follow such name, without intervening written, printed, or graphic matter, except that the varietal name of the wax beans and the designation of the length of cut may so intervene.

QUALITY

Findings of Fact. 1. The quality of canned green and canned wax beans is judged by consumers primarily on the basis of (1) eating quality and (2) appearance.

2. The appearance of canned green and canned wax beans is marred by the presence of units having blemished areas. These areas vary widely, some being hardly noticeable, while others are of such size that the average consumer will discard the units so blemished. When the aggregate blemished area on a unit is not more than the area of a circle $\frac{1}{4}$ inch in diameter it generally escapes the notice of both consumers and canners. Units having aggregate blemished areas larger than that are generally regarded as blemished. The presence of more than 12 blemished units per 12 ounces of drained weight so lowers the quality of these foods that their labels should bear a statement of substandard quality.

(3) The appearance of canned green and canned wax beans is marred by the presence of very short units, such as short end pieces sifted from regular cuts, unless all units are short. Except where substantially all the units are less than $\frac{1}{8}$ inch in length the presence in 12 ounces

drained weight of more than 60 units which are less than $\frac{1}{4}$ inch in length so lowers the quality that a statement of substandard quality should be required. This finding is not applicable when the optional bean ingredient is pods sliced lengthwise (§ 51.10 (a) (2)).

4. The appearance of canned green and canned wax beans is marred by the presence of extraneous vegetable matter. In canning an effort is made to eliminate extraneous matter, but due to accidents, and sometimes to carelessness, leaves, pieces of the vine, detached stems, etc., occasionally get into the cans of the finished food. Since the inclusion of extraneous matter is generally accidental and the amount variable, it is advisable to examine a fairly large sample of canned green or canned wax beans to determine its significance. It is reasonable to require that the label bear a statement of substandard quality when there is more than 0.6 ounce of extraneous vegetable matter per 60 ounces of drained weight.

5. The appearance and also the eating quality of canned green beans and canned wax beans is adversely affected by the presence of unstemmed units, that is, units to which remain attached all or part of the stem that connects the pod with the vine. In good canning practice an effort is made to remove stems as completely as possible, but this is done by machines which do not always effect a complete removal of the stems from all of the pods. These machines are least effective with small pods. It is impracticable to set separate limits based on different sieve sizes of green and wax beans, but a limit of 6 unstemmed units per 12 ounces drained weight is a reasonable overall limit for all sizes. Beyond this limit the food is of substandard quality.

6. The eating quality of canned green and canned wax beans depends largely on certain characteristics of the pods. Generally, the small, immature pods are more desirable. With increasing maturity the pods become larger and the seeds more prominent. Finally the pods lose their succulence and become thin, fibrous and woody. The desirable effects of increasing maturity, however, do not develop with strict uniformity in all varieties of green and wax beans.

7. Most varieties of green and wax beans develop large seeds as they approach maturity. Large seeds are generally mealy, have tough skins and thus make for poor eating quality. Often there are considerable numbers of seed or pieces of seed loose in the can, marring the appearance of the canned green or canned wax beans. Various methods for utilizing the percentage of seed as a measure of quality have been proposed. Each is subject to some objection. The two methods most likely to show accurately the conditions which render canned

green and canned wax beans of low quality are (1) to determine the percent by weight of loose seed and pieces of seed, and (2) to determine the percent by weight of seed or pieces of seed in pods trimmed to remove portions from which seed have become separated. When the percent of seed in the trimmed pods is greater than 15 percent, or when loose seed and pieces of seed exceed 5 percent of the drained weight, the product is of substandard quality. It is impracticable to apply these tests to green or wax beans sliced lengthwise.

8. Tough strings are objectionable in canned green or canned wax beans. The relative toughness of the strings is of great importance, and in order to define a tough string a method for testing strings for toughness is necessary. A reasonably satisfactory method in use for several years provides for attaching a $\frac{1}{4}$ pound weight to the string, suspending this weight by the string and classing as tough those strings which sustain the weight for 5 seconds or more. Since strings are not of equal toughness throughout their entire length, the test should be applied at the toughest portion.

In general, the proportion of bean pods which have tough strings is greater the larger the sieve size of the pods, and by picking the beans frequently it is possible to keep the proportion of the larger sieve sizes low, and hence to keep the proportion of tough strings low. Present conditions make it extremely difficult in harvesting to avoid getting in the pickings a considerable proportion of number 4 and 5 sieve size pods, but it is not unreasonably difficult to keep relatively low the proportion of number 6 sieve size pods (pods $\frac{7}{16}$ inch or more in diameter). Where canned green beans or canned wax beans include pods or pieces of pods $\frac{7}{16}$ inch or more in diameter and the number of tough strings is greater than 12 per 12 ounces drained weight, they are of such low quality that it is reasonable to require the label to bear a declaration of substandard quality.

9. The amount of woody or fibrous material in the pods increases as maturity advances, lowering the eating quality of canned green and canned wax beans. A chemical method of analysis has been developed to determine the amount of this objectionable fibrous material in the pods from which the seeds have been removed. The details of the method are contained in finding 10. When the fibrous material of the deseeded pods of canned green or canned wax beans, as determined by this method, exceeds 0.15 percent of the drained weight of such pods the eating quality is so impaired that the label should bear a statement of substandard quality.

10. A practicable method for determining whether canned green or

canned wax beans are of substandard quality is as follows:

(1) Distribute the contents of the container over the meshes of a circular sieve which has been previously weighed. The diameter of the sieve is 8 inches if the quantity of the contents of the container is less than 3 pounds, and 12 inches if such quantity is 3 pounds or more. The bottom of the sieve is woven wire cloth which complies with the specifications for such cloth set forth under "2380 Micron (No. 8)" in Table I of "Standard Specifications for Sieves," published March 1, 1940, in L. C. 584 of the U. S. Department of Commerce, National Bureau of Standards. Without shifting the material on the sieve, so incline the sieve as to facilitate drainage. Two minutes from the time drainage begins, weigh the sieve and the drained material. Record, in ounces, the weight so found, less the weight of the sieve, as the drained weight.

(2) Pour the drained material from the sieve into a flat tray and spread it in a layer of fairly uniform thickness. In case the material consists of the optional ingredient specified in paragraph (a) (3) or a mixture of two or more of the optional ingredients specified in paragraphs (a) (1) to (a) (4), inclusive, of § 51.10, count and record, but do not remove, all units each of which is less than $\frac{1}{4}$ inch long. Divide the number of units which are less than $\frac{1}{4}$ inch long by the drained weight recorded in (1) and multiply by 12 to obtain the number of such units per 12 ounces drained weight.

From the drained material select a representative sample of $3\frac{1}{2}$ to 4 ounces, weigh and record its weight in ounces for use in (5). However, in case the drained material does not include pods or pieces of pods $\frac{7}{16}$ inch or more in diameter it is unnecessary either to weigh the representative sample or to separate and test the strings as directed in (5). After the representative sample has been selected, cover the material remaining to prevent evaporation and reserve for further examination under (7).

(3) From the representative sample selected in (2) segregate and reserve for (7) the extraneous vegetable matter (including any stems completely detached from pods or pieces of pods). Then segregate the loose seed and, except in the case of pods sliced lengthwise, reserve for (10) the loose seed so segregated (as here used and in subsequent paragraphs of this method, the word seed means seed and pieces of seed). Count and record as unstemmed units those pods and pieces of pods to which any portion of the connecting stem is attached. Detach stems and discard. Count and record but do not remove the blemished units. A unit is considered blemished when the aggregate blemished area exceeds

the area of a circle $\frac{1}{4}$ inch in diameter.

Note: In the case of pods sliced lengthwise the removal of loose seed in (3) and of the seed from the pods in (4) is only for the purpose of preparing sample for fiber determination in (5) and (6). No trimming of pods, or weighing of seed, as directed in (4) need, therefore, be done.

(4) From the pods in (3) trim off, as far as the end of the space formerly occupied by seed, any portions of pods from which seed have become separated. Remove and discard any seed from the trimmings and reserve the trimmings for (5). Weigh and record the weight of the trimmed pods. Deseed the trimmed pods and reserve the deseeded pods for (5). Collect the seed on a sieve of mesh fine enough to retain them, and so distribute them that any liquid drains away. Weigh the seed, divide by the weight of the trimmed pods and multiply by 100 to obtain percent by weight of seed in the trimmed pods.

(5) If, pursuant to (2), it is unnecessary to separate and test the strings, weigh and record the weight of the deseeded pods and proceed to (6); otherwise separate the strings from the deseeded pods segregated in (4) and promptly test as follows:

Fasten clamp, weighted to $\frac{1}{2}$ pound, to one end of the string, grasp the other end with the fingers (a cloth may be used to aid in holding the string), and lift gently. Count the string as tough if it supports the $\frac{1}{2}$ pound weight for at least 5 seconds. If the string breaks before 5 seconds, test such parts into which it breaks as are $\frac{1}{4}$ inch or more in length and if any such part of the string supports the $\frac{1}{2}$ pound weight for at least 5 seconds count the string as tough. Divide the number of tough strings by the weight of the sample recorded in (2) and multiply by 12 to obtain the number of tough strings per 12 ounces drained weight. Return both the broken and the unbroken strings, which were separated for testing, to the pods from which they were separated and add any trimmings reserved in (4). Weigh and record as the weight of deseeded pods for use in (6).

(6) Transfer the deseeded pods, strings, and trimmings weighed in (5) to the metal cup of a malted milk stirrer and crush. Wash material adhering to the crushing instrument back into cup with 200 cc of boiling water. Bring mixture to a boil and add 25 cc of 50 percent (by weight) sodium hydroxide solution. (If foaming is excessive a piece of paraffin may be added.) Boil for 5 minutes, then stir for an additional 5 minutes with a malted milk stirrer capable of a no-load speed of at least 7200 r.p.m. Use a rotor with two scalloped buttons shaped as shown in the diagram in Exhibit 1. Transfer the material from the cup to a previously weighed

30-mesh monel metal screen having a diameter of about 4 inches and side walls about 1 inch high, and wash with a stream of warm water until washings are clear and free from alkali.¹ Dry the screen and fibrous material for 2 hours at 100° C., cool, weigh, and deduct weight of screen. Divide the weight of fibrous material by the weight of deseeded pods recorded in (5) and multiply by 100 to obtain the percent of fibrous material in the deseeded pods.

(7) Examine the drained material reserved in (2), counting and recording the number of blemished units for (8), and the number of unstemmed units for (9). Remove the extraneous vegetable matter (including detached stems), combine with similar matter reserved in (3), and retain for (11). Reserve the remaining drained material for (10).

(8) Add to the number of blemished units recorded in (7), the number of blemished units recorded in (3). Divide the sum by the drained weight recorded in (1) and multiply by 12 to obtain the number of blemished units per 12 ounces of drained weight.

(9) Add together the number of unstemmed units recorded in (7) and in (3). Divide the sum by the drained weight recorded in (1) and multiply by 12 to obtain the number of unstemmed units per 12 ounces of drained weight.

(10) From the drained material reserved in (7), except in the case of pods sliced lengthwise, segregate the loose seed, add to the loose seed reserved in (3), and weigh. Divide this weight by the drained weight recorded in (1) and multiply by 100 to obtain the percent of loose seed in the drained weight.

(11) If the drained weight recorded in (1) was less than 60 ounces, drain and weigh as directed in (1), the contents of additional containers until a total of not less than 60 ounces drained material is obtained. From this additional drained material segregate the extraneous vegetable matter (including detached stems) and combine it with the similar matter reserved in (7). Weigh the combined extraneous vegetable matter, divide by the total weight of drained material examined and multiply by 60 to obtain the weight of extraneous vegetable matter per 60 ounces of drained weight.

11. When canned green or canned wax beans fall below the standard of quality, a label statement which fairly and accurately informs the consumer of that fact is the general statement of substandard quality specified in § 10.2 (a) 21 CFR, Cum. Supp.

Conclusions: On the basis of the evi-

¹ Washing may be quickly accomplished by moving screen back and forth under a slow running tap of warm water, taking care to prevent washing any fibrous material over the sides of the screen.

dence of record and the foregoing findings of fact, consideration having been given to and due allowance made for the differing characteristics of the several varieties of green and wax beans, it is concluded that the promulgation of the following regulations fixing and establishing standards of quality for canned green beans and for canned wax beans will promote honesty and fair dealing in the interest of consumers.

§ 51.11 Canned green beans; quality; label statement of substandard quality.

(a) The standard of quality of canned green beans is as follows:

When tested by the method prescribed in paragraph (b) of this section:

(1) In the case of cut beans (§ 51.10 (a) (3)) and mixtures of two or more of the optional ingredients specified in § 51.10 (a) (1) to (a) (4), inclusive, not more than 60 units per 12 ounces drained weight are less than $\frac{1}{4}$ inch long.

(2) The trimmed pods contain not more than 15 percent by weight of seed and pieces of seed.

(3) In case there are present pods or pieces of pods $\frac{3}{4}$ inch or more in diameter, there are not more than 12 strings per 12 ounces of drained weight which will support $\frac{1}{2}$ pound for 5 seconds or longer.

(4) The deseeded pods contain not more than 0.15 percent by weight of fibrous material.

(5) There are not more than 12 blemished units per 12 ounces of drained weight. A unit is considered blemished when the aggregate blemished area exceeds the area of a circle $\frac{1}{4}$ inch in diameter.

(6) There are not more than 6 unstemmed units per 12 ounces of drained weight.

(7) The combined weight of loose seed and pieces of seed is not more than 5 percent of the drained weight. This provision does not apply in case the green bean ingredient is pods sliced lengthwise (§ 51.10 (a) (2)).

(8) The combined weight of leaves, detached stems and other extraneous vegetable matter is not more than 0.6 ounce per 60 ounces of drained weight.

(b) Canned green beans shall be tested by the following method to determine whether they meet the requirements of paragraph (a) of this section:

(1) Distribute the contents of the container over the meshes of a circular sieve which has been previously weighed. The diameter of the sieve is 8 inches if the quantity of the contents of the container is less than 3 pounds, and 12 inches if such quantity is 3 pounds or more. The bottom of the sieve is woven wire cloth which complies with the specifications for such cloth set forth under "2380 Micron (No. 8)" in Table I of "Stand-

ard Specifications for Sieves," published March 1, 1940, in L. C. 584 of the U. S. Department of Commerce, National Bureau of Standards. Without shifting the material on the sieve, so incline the sieve as to facilitate drainage. Two minutes from the time drainage begins, weigh the sieve and the drained material. Record, in ounces, the weight so found, less the weight of the sieve, as the drained weight.

(2) Pour the drained material from the sieve into a flat tray and spread it in a layer of fairly uniform thickness. In case the material consists of the optional ingredient specified in paragraph (a) (3) or a mixture of two or more of the optional ingredients specified in paragraphs (a) (1) to (a) (4), inclusive, of § 51.10, count and record, but do not remove, all units each of which is less than $\frac{1}{2}$ inch long. Divide the number of units which are less than $\frac{1}{2}$ inch long by the drained weight recorded in (1) and multiply by 12 to obtain the number of such units per 12 ounces drained weight.

From the drained material select a representative sample of $3\frac{1}{4}$ to 4 ounces, weigh and record its weight in ounces for use in (5). However, in case the drained material does not include pods or pieces of pods $\frac{2}{64}$ inch or more in diameter it is unnecessary either to weigh the representative sample or to separate and test the strings as directed in (5). After the representative sample has been selected, cover the material remaining to prevent evaporation and reserve for further examination under (7).

(3) From the representative sample selected in (2) segregate and reserve for (7) the extraneous vegetable matter (including any stems completely detached from pods or pieces of pods). Then segregate the loose seed and, except in the case of pods sliced lengthwise, reserve for (10) the loose seed so segregated (as here used and in subsequent paragraphs of this method, the word seed means seed and pieces of seed). Count and record as unstemmed units those pods and pieces of pods to which any portion of the connecting stem is attached. Detach stems and discard. Count and record but do not remove the blemished units. A unit is considered blemished when the aggregate blemished area exceeds the area of a circle $\frac{1}{8}$ inch in diameter.

Note: In the case of pods sliced lengthwise the removal of loose seed in (3) and of the seed from the pods in (4) is only for the purpose of preparing sample for fiber determination in (5) and (6). No trimming of pods, or weighing of seed, as directed in (4) need, therefore, be done.

(4) From the pods in (3) trim off, as far as the end of the space formerly occupied by seed, any portions of pods from which seed have become separated. Remove and discard any

seed from the trimmings and reserve the trimmings for (5). Weigh and record the weight of the trimmed pods. Deseed the trimmed pods and reserve the deseeded pods for (5). Collect the seed on a sieve of mesh fine enough to retain them, and so distribute them that any liquid drains away. Weigh the seed, divide by the weight of the trimmed pods and multiply by 100 to obtain percent by weight of seed in the trimmed pods.

(5) If, pursuant to (2), it is unnecessary to separate and test the strings, weigh and record the weight of the deseeded pods and proceed to (6); otherwise separate the strings from the deseeded pods segregated in (4) and promptly test as follows:

Fasten clamp, weighted to $\frac{1}{2}$ pound, to one end of the string, grasp the other end with the fingers (a cloth may be used to aid in holding the string), and lift gently. Count the string as tough if it supports the $\frac{1}{2}$ pound weight for at least 5 seconds. If the string breaks before 5 seconds, test such parts into which it breaks as are $\frac{1}{2}$ inch or more in length and if any such part of the string supports the $\frac{1}{2}$ pound weight for at least 5 seconds count the string as tough. Divide the number of tough strings by the weight of the sample recorded in (2) and multiply by 12 to obtain the number of tough strings per 12 ounces drained weight. Return both the broken and the unbroken strings, which were separated for testing, to the pods from which they were separated and add any trimmings reserved in (4). Weigh and record as the weight of deseeded pods for use in (6).

(6) Transfer the deseeded pods, strings, and trimmings weighed in (5) to the metal cup of a malted milk stirrer and crush. Wash material adhering to the crushing instrument back into cup with 200 cc of boiling water. Bring mixture to a boil and add 25 cc of 50 percent (by weight) sodium hydroxide solution. (If foaming is excessive a piece of paraffin may be added.) Boil for 5 minutes, then stir for an additional 5 minutes with a malted milk stirrer capable of a no-load speed of at least 7200 r.p.m. Use a rotor with two scalloped buttons shaped as shown in the diagram in Exhibit 1. Transfer the material from the cup to a previously weighed 30-mesh monel metal screen having a diameter of about 4 inches and side walls about 1 inch high, and wash with a stream of warm water until washings are clear and free from alkali.² Dry the screen and fibrous material for 2 hours at 100° C., cool, weigh, and deduct weight of screen. Divide the weight of fibrous material by the weight of deseeded pods re-

corded in (5) and multiply by 100 to obtain the percent of fibrous material in the deseeded pods.

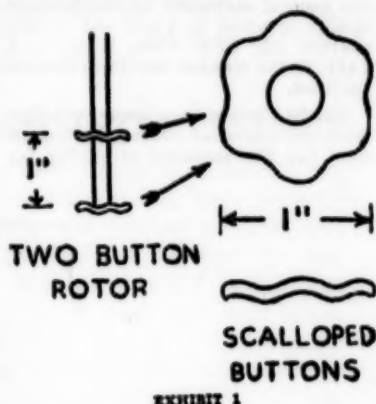


EXHIBIT 1

(7) Examine the drained material reserved in (2), counting and recording the number of blemished units for (8), and the number of unstemmed units for (9). Remove the extraneous vegetable matter (including detached stems), combine with similar matter reserved in (3), and retain for (11). Reserve the remaining drained material for (10).

(8) Add to the number of blemished units recorded in (7), the number of blemished units recorded in (3). Divide the sum by the drained weight recorded in (1) and multiply by 12 to obtain the number of blemished units per 12 ounces of drained weight.

(9) Add together the number of unstemmed units recorded in (7) and in (3). Divide the sum by the drained weight recorded in (1) and multiply by 12 to obtain the number of unstemmed units per 12 ounces of drained weight.

(10) From the drained material reserved in (7), except in the case of pods sliced lengthwise, segregate the loose seed, add to the loose seed reserved in (3), and weigh. Divide this weight by the drained weight recorded in (1) and multiply by 100 to obtain the percent of loose seed in the drained weight.

(11) If the drained weight recorded in (1) was less than 60 ounces, drain and weigh as directed in (1), the contents of additional containers until a total of not less than 60 ounces drained material is obtained. From this additional drained material segregate the extraneous vegetable matter (including detached stems) and combine it with the similar matter reserved in (7). Weigh the combined extraneous vegetable matter, divide by the total weight of drained material examined and multiply by 60 to obtain the weight of extraneous vegetable matter per 60 ounces of drained weight.

(c) If the quality of the canned

² Washing may be quickly accomplished by moving screen back and forth under a slow running tap of warm water, taking care to prevent washing any fibrous material over the sides of the screen.

green beans falls below the standard of quality prescribed by paragraph (a) of this section, the label shall bear the general statement of substandard quality specified in § 10.2 (a) of this chapter (21 CFR, Cum. Supp., 10.2 (a)), in the manner and form therein specified.

§ 51.16 *Canned wax beans; quality; label statement of substandard quality.* (a) The standard of quality for

canned wax beans is that prescribed for canned green beans by § 51.11 (a) and (b).

(b) If the quality of canned waxed beans falls below the standard of quality prescribed by paragraph (a) of this section, the label shall bear the general statement of substandard quality specified by § 10.2 (a) of this chapter (21 CFR, Cum. Supp., 10.2 (a)), in the manner and form therein specified.

Effective date: The regulations hereby promulgated shall become effective on the ninetieth day following the date of publication of this order in the Federal Register.

Dated: February 13, 1947.

(Signed) Watson B. Miller, Administrator.

Filed at 10:18 a. m., February 18, 1947.